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Perry

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(54) **BRAKE MASTER CYLINDER**

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(72) Inventor: **Andrew James Perry**, Palmdale, CA (US)

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(60) Provisional application No. 62/857,654, filed on Jun. 5, 2019.

(51) **Int. Cl.**

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B60T 17/06	(2006.01)
B62K 19/38	(2006.01)
B62L 3/02	(2006.01)
B62M 25/08	(2006.01)

(52) **U.S. Cl.**

CPC ***B60T 11/22*** (2013.01); ***B60T 17/06*** (2013.01); ***B62K 19/38*** (2013.01); ***B62L 3/023*** (2013.01); ***B62M 25/08*** (2013.01)

(58) **Field of Classification Search**

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USPC 188/344

See application file for complete search history.

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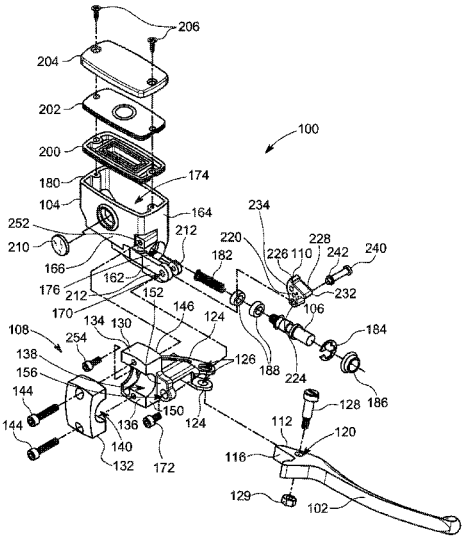
(57) **ABSTRACT**

A brake assembly includes a reservoir body adapted to store a brake fluid and defining a cylinder bore, and a piston adapted to reciprocate inside the cylinder bore. The brake assembly also includes a base bracket pivotably coupled to a reservoir body and adapted to be mounted to a handlebar, and a handle pivotally coupled to the base bracket and adapted to pivot relative to the base bracket. A drive link is pivotable coupled to the reservoir body and is configured to pivot relative to the reservoir body to advance the piston inside the cylinder bore in response to the pressing of the handle. The handle is configured to be set at a plurality of angular positions with respect to the reservoir body by pivoting the base bracket relative to the reservoir body.

12 Claims, 10 Drawing Sheets



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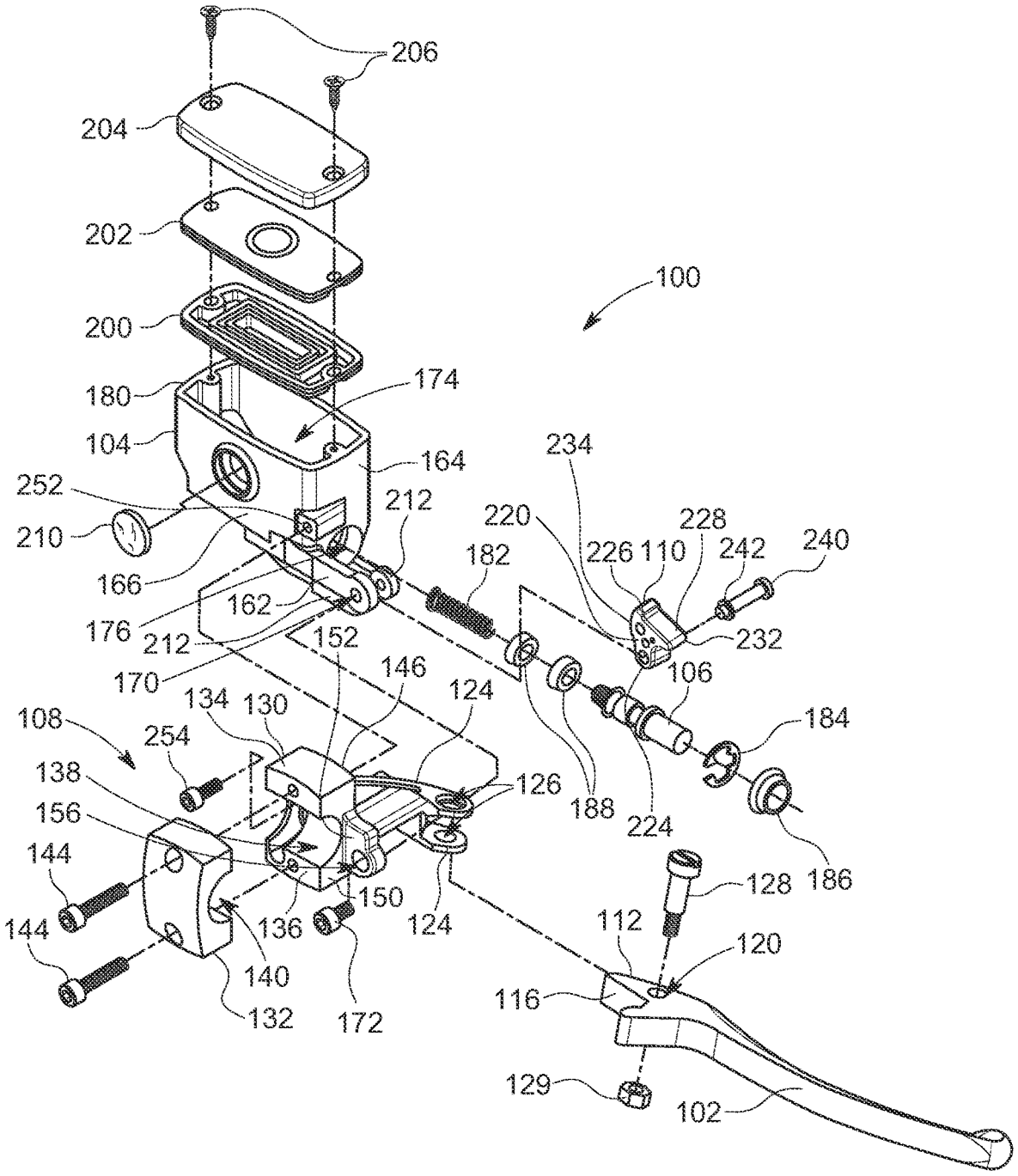
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102

FIG. 1

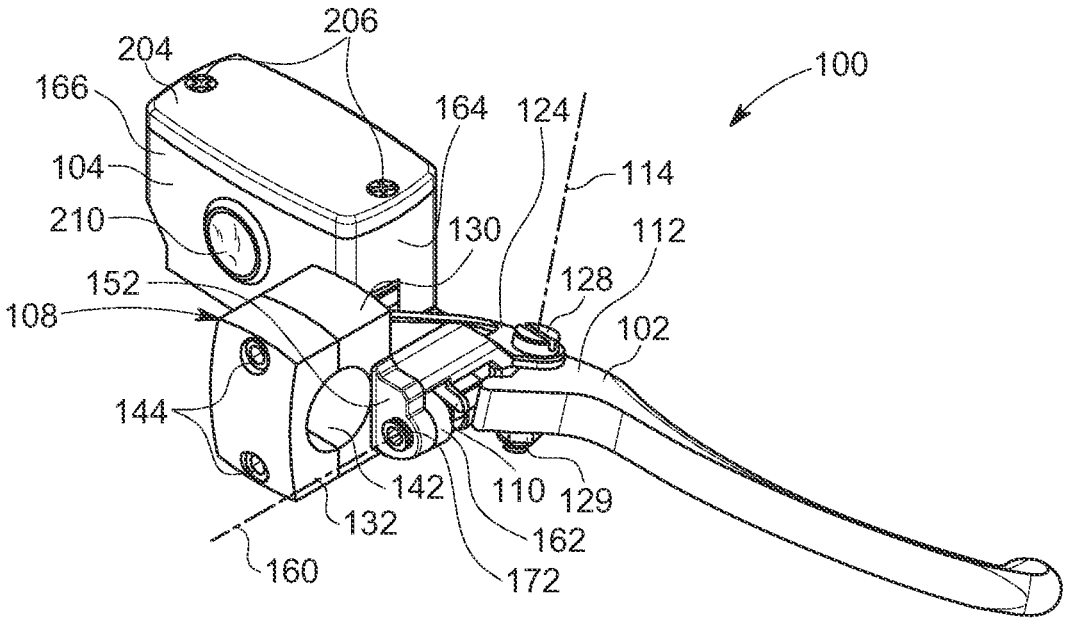
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FIG. 2

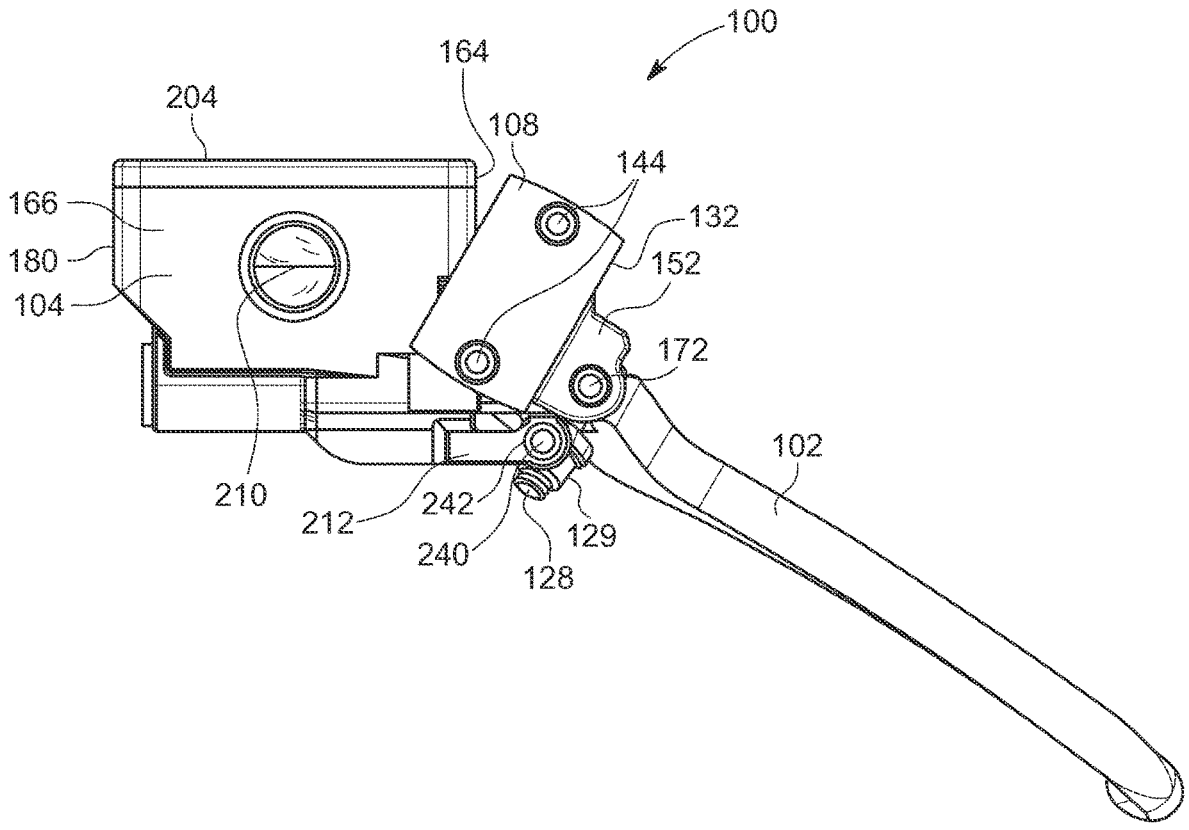
100
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FIG. 3

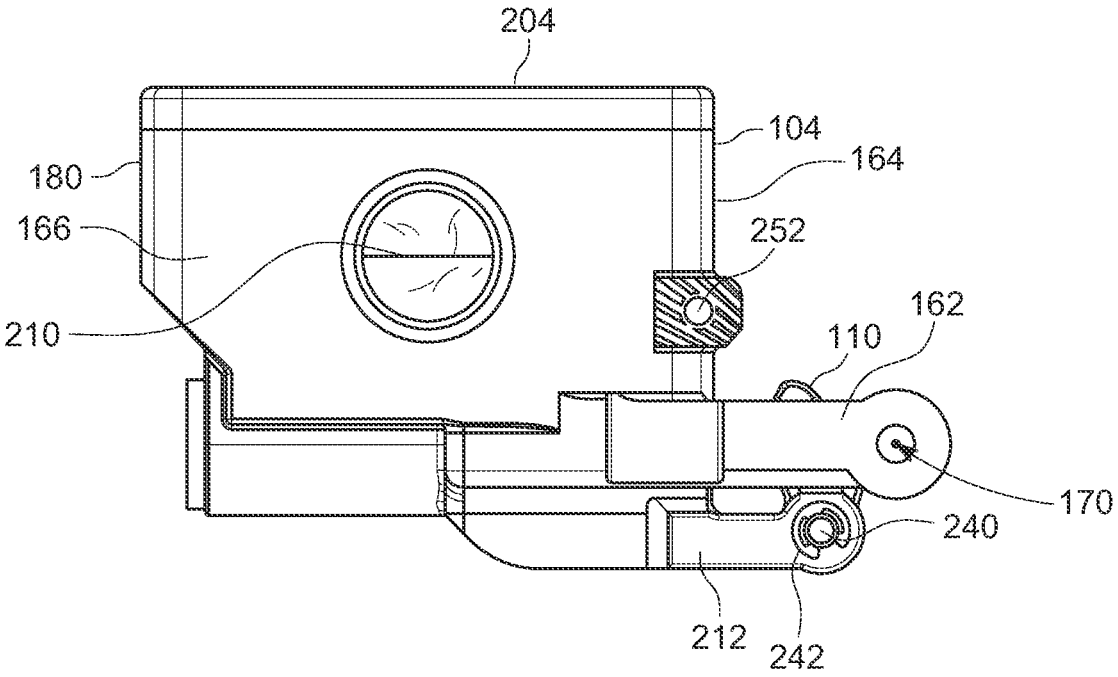

FIG. 4

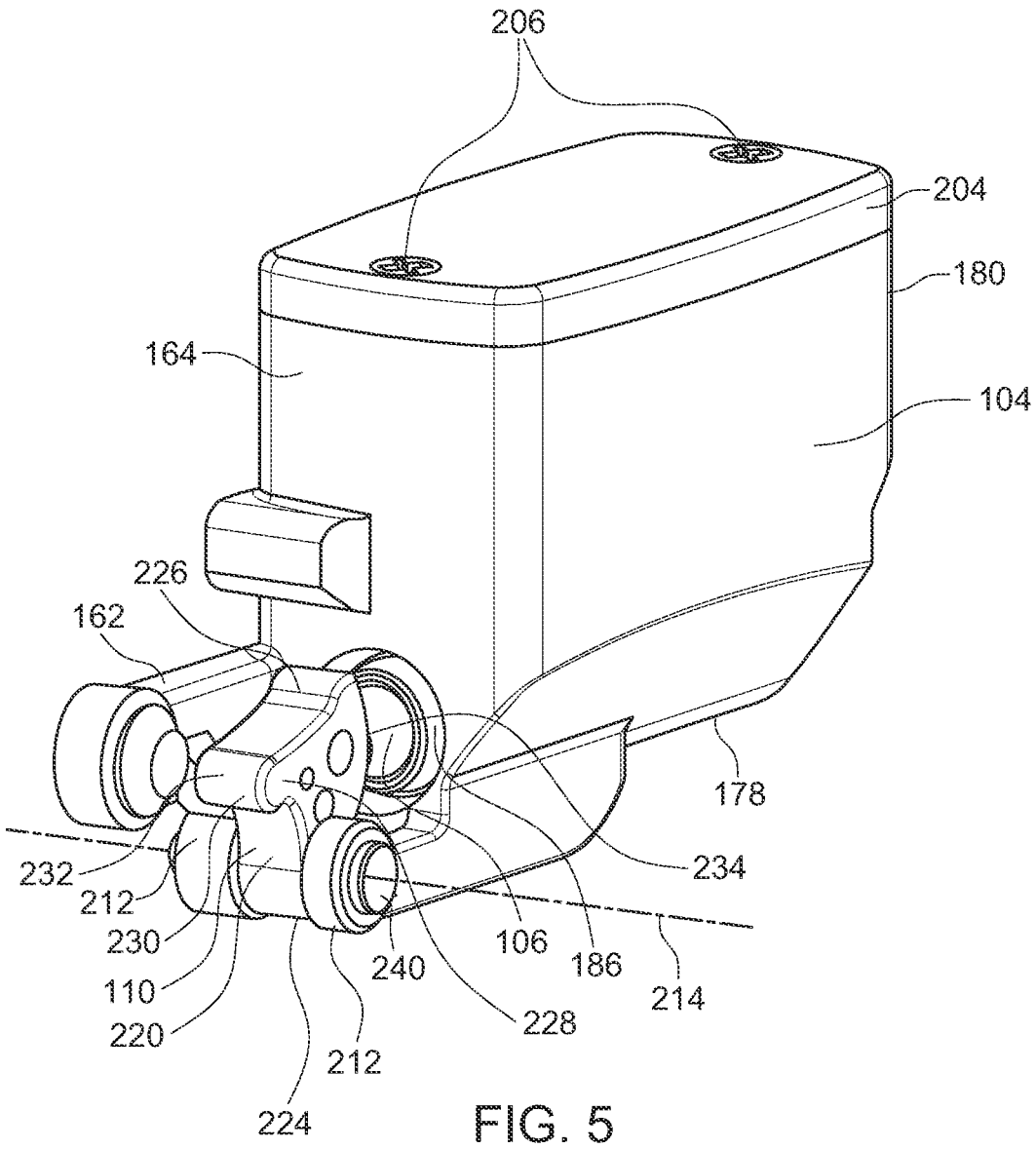
206
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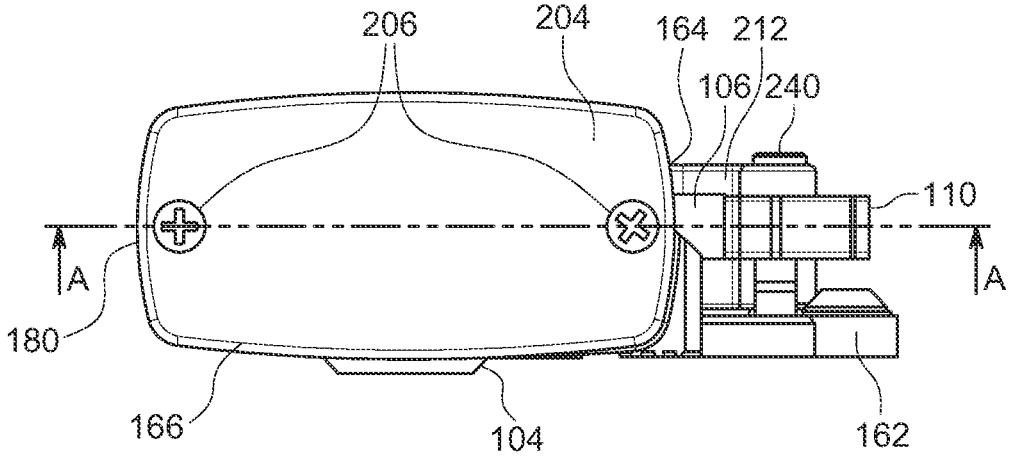
FIG. 5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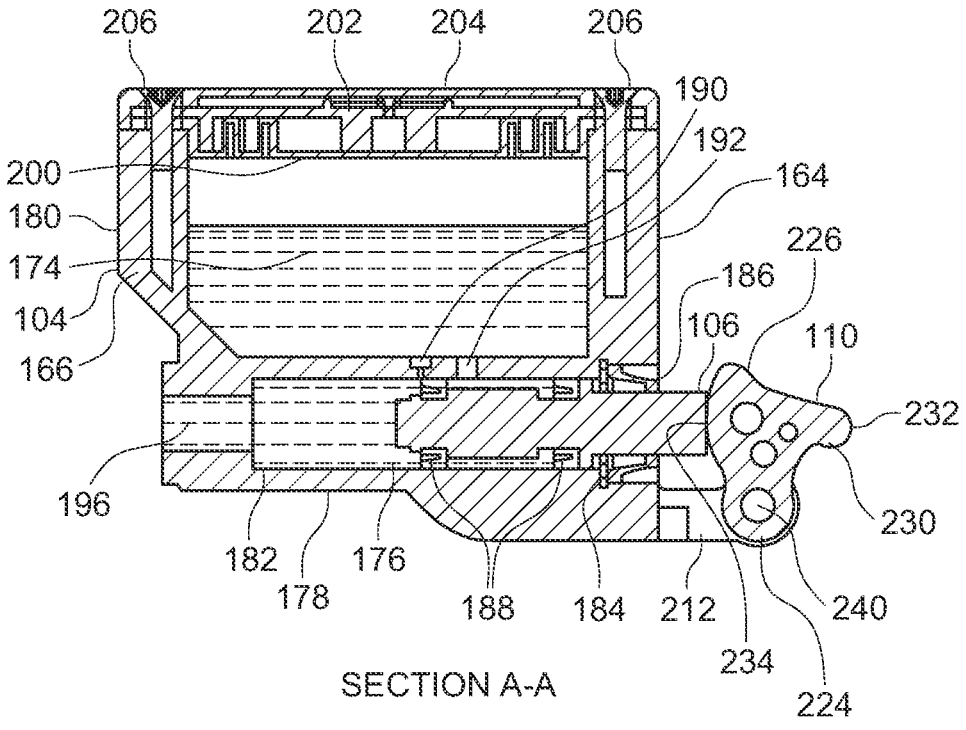
162

FIG. 6


206
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SECTION A-A

FIG. 7

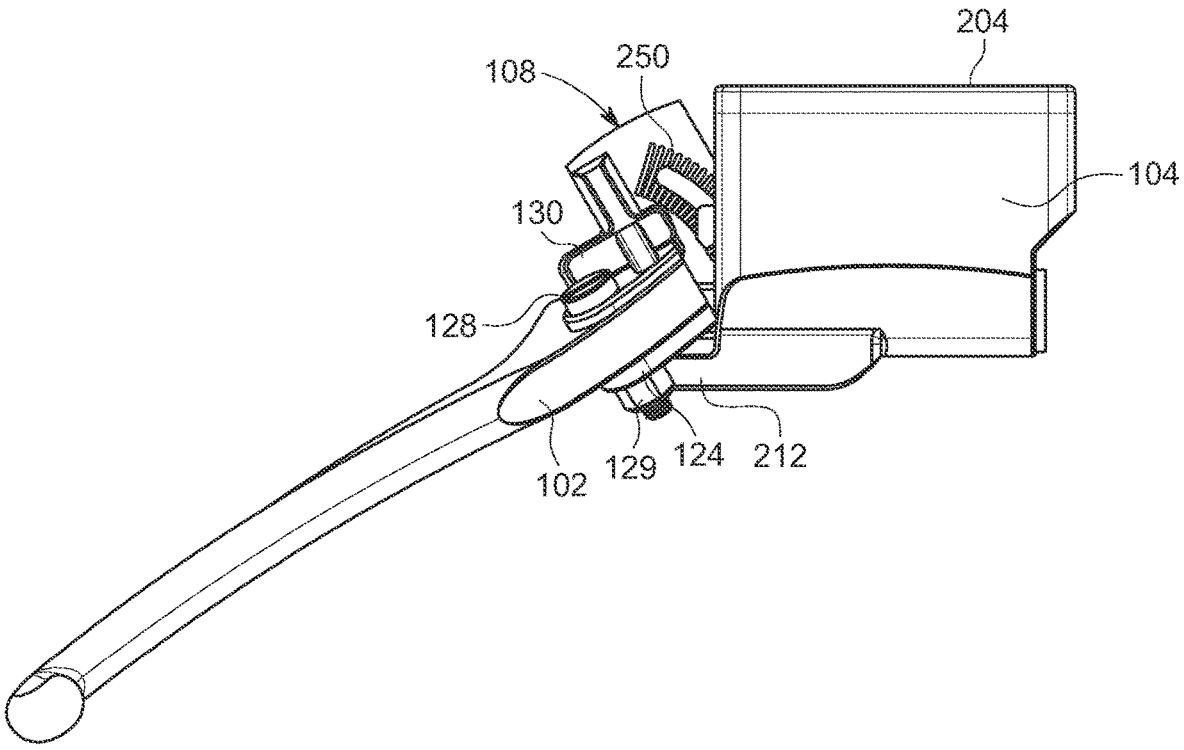


FIG. 8

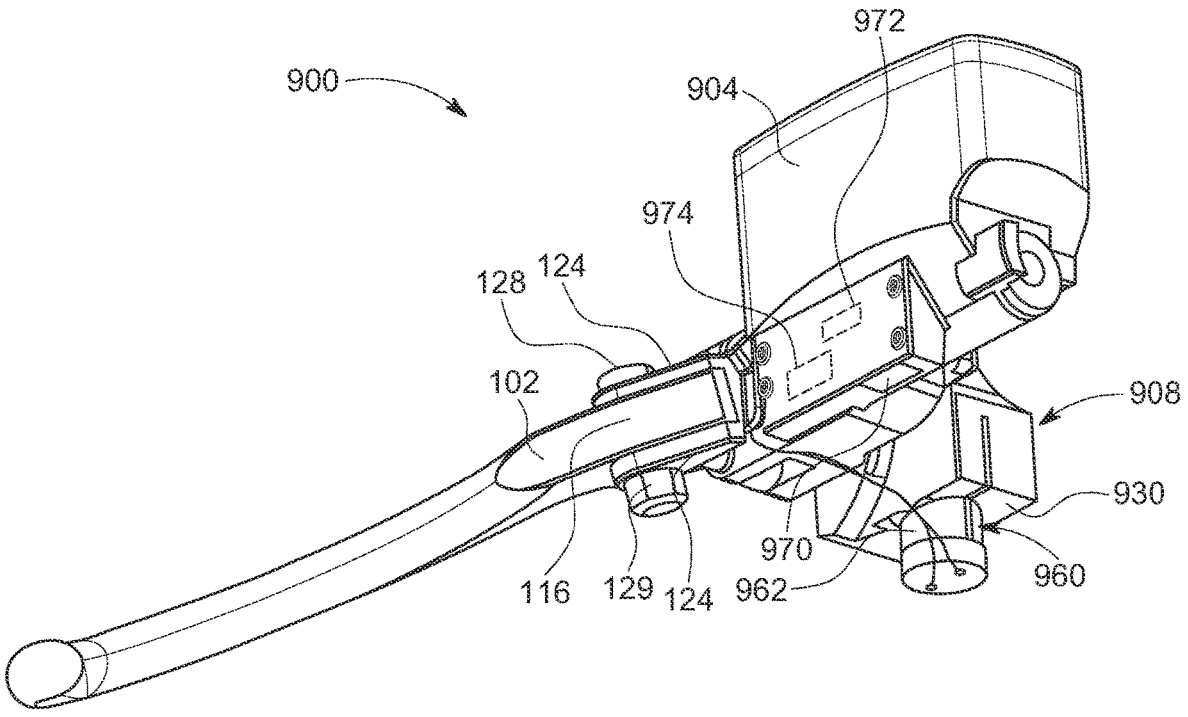


FIG. 9

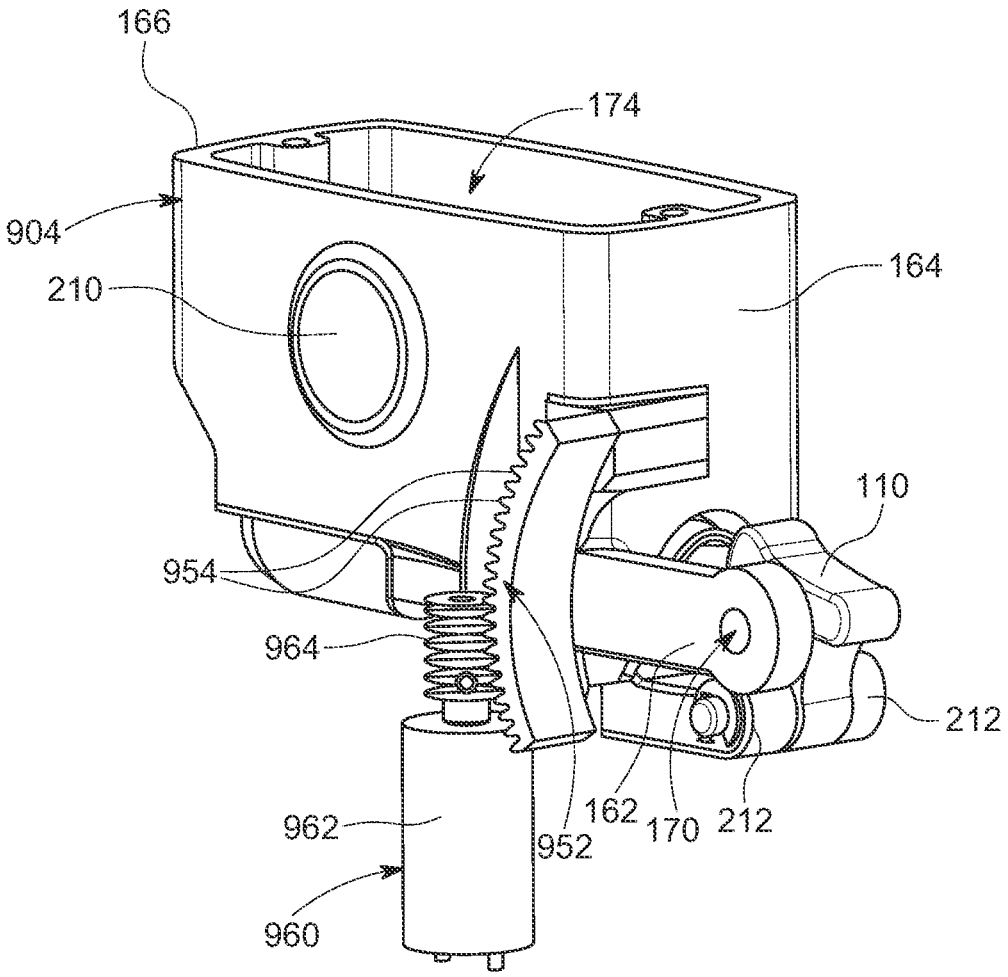
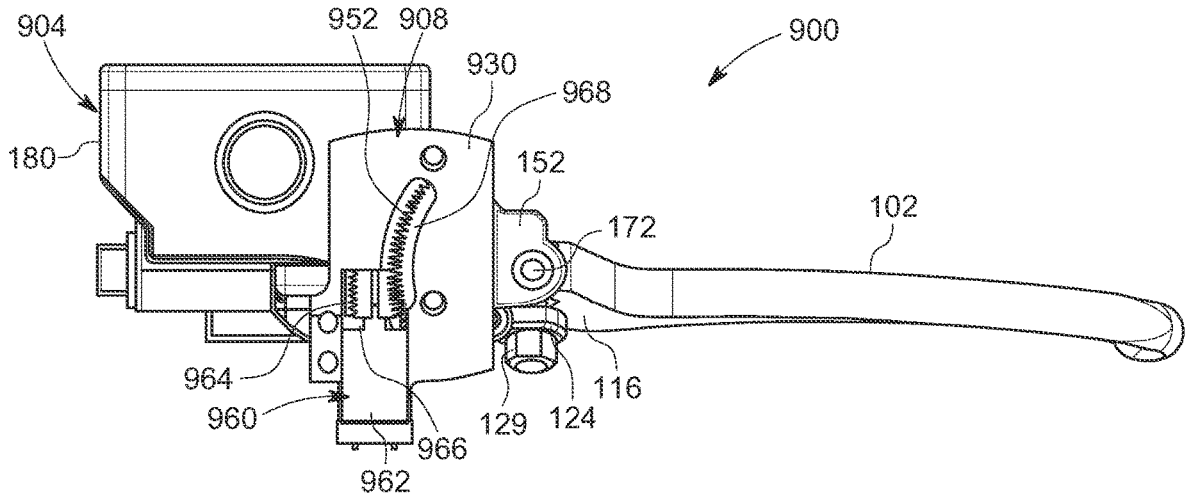


FIG. 10


904
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908
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930
968
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152
102
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964
960
966
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124
116

FIG. 11

BRAKE MASTER CYLINDER

CROSS-REFERENCE TO RELATED APPLICATIONS

This application is a Continuation-in-Part of U.S. application Ser. No. 16/888,867, filed Jun. 1, 2020, to Perry, which claims benefit of U.S. Provisional Patent Application No. 62/857,654, filed Jun. 5, 2019, the contents of each are incorporated by reference in their entireties.

FIELD OF THE DISCLOSURE

The present invention relates to brake assembly, and more specifically, to a brake assembly for a motorcycle having a reservoir body that stays level regardless of a positioning of a handle/lever of the brake assembly relative to a handlebar of the motorcycle.

BACKGROUND OF THE INVENTION

Brake actuation assembly for front braking on motorcycles are mounted on the handlebars. For a motorcycle, the brake fluid reservoir of the brake actuation assembly is on top of the handlebars. But some people like to ride with the handle/lever for actuating the brakes at a different angle, to grip it differently. Changes in the angular position of the handle also causes the tilting of the reservoir body holding the brake fluid relative to the ground, allowing the air to enter the housing of the piston from the reservoir body. This results into a loss of fluid pressure, which is undesirable.

The invention prevents air from entering a hydraulic piston brake line. The invention prevents air from entering brake lines by allowing the adjustment of the angular position of the handle relative to the reservoir body.

BRIEF SUMMARY OF THE PRESENT INVENTION

The present invention provides a brake assembly adapted to be mounted to a handlebar of a vehicle. The brake assembly includes a reservoir body adapted to store a brake fluid and defines a cylinder bore, and a piston adapted to reciprocate inside the cylinder bore. The brake assembly further includes a base bracket pivotably coupled to the reservoir body and adapted to be mounted to the handlebar, and a handle pivotally coupled to the base bracket and adapted to pivot relative to the base bracket. Moreover, the brake assembly includes a drive link pivotably coupled to the reservoir body and configured to pivot relative to the reservoir body to advance the piston inside the cylindrical bore in response to the pressing of the handle. The handle is configured to be set at a plurality of angular positions with respect to the reservoir body by pivoting the base bracket relative to the reservoir body.

In one aspect, the base bracket includes an arcuate slot to facilitate the setting of the handle at the plurality of angular positions.

In some embodiments, the reservoir body defines a mating groove and the brake assembly includes a screw extending inside the mating groove through the arcuate slot to set the handle at one of the plurality of angular positions.

In another aspect, the reservoir body includes a gear wheel portion having a plurality of teeth. The brake assembly also includes an actuator mounted to the base bracket and having a worm gear engaged with the gear wheel portion to facilitate the pivoting of the base bracket relative to the reservoir body to set the handle the plurality of angular positions.

In some embodiments, the actuator includes a motor, and the worm gear is connected to the motor and rotates in response to an actuation of the motor to facilitate the setting of the handle in any of the plurality of angular positions relative to the reservoir body.

According to an aspect, the reservoir body includes an extension arm, and the base bracket includes an arm pivotably coupled to the extension arm.

In some embodiments, the drive link includes a convex surface adapted to contact the piston, and a round surface arranged opposite to the convex surface and adapted to contact the handle. The convex surface and the round surface together facilitate the advancement of the piston inside the cylindrical bore in response to the pressing of the handle at any of the plurality of angular positions of the handle relative to the reservoir body.

In one aspect, the reservoir body includes a pair of brackets extending outwardly of a first lateral end of the reservoir body. The drive link is arranged between the pair of brackets and is pivotally coupled to the pair of brackets.

According to an aspect, the drive link includes a vertically extending body portion having a first longitudinal end and a second longitudinal end, and an arm portion extending from the body portion and arranged proximate to the second longitudinal end of the body. The handle is adapted to contact the arm and the first longitudinal end is pivotally coupled to the pair of brackets.

In one aspect, the handle is configured to advance the drive link in each of the plurality of angular positions of the handle relative to the reservoir body.

In some embodiments, the brake assembly further includes a cover bracket adapted to engage with the base bracket to facilitate the mounting of the base bracket to the handlebar.

In an aspect, the base bracket and the cover bracket together define a handlebar slot and the handlebar extends through the handlebar slot in the engagement of the brake assembly with the handlebar.

BRIEF DESCRIPTION OF THE DRAWINGS

FIG. **1** illustrates an exploded perspective view of a brake assembly, according to an embodiment of the disclosure;

FIG. **2** illustrates an isometric front view of the brake assembly having a reservoir body traditionally aligned with a handle of the brake assembly, according to an embodiment of the disclosure;

FIG. **3** illustrates a front view of the brake assembly with the handle and a base bracket arranged at an angular position relative to the reservoir body, according to an embodiment of the disclosure;

FIG. **4** illustrates a front view of the reservoir body and a driver link pivotally connected to the reservoir body, according to an embodiment of the disclosure;

FIG. **5** illustrates an isometric rear view of the reservoir body and the driver link pivotally connected to the reservoir body, according to an embodiment of the disclosure;

FIG. **6** illustrates a top view of the reservoir body and the drive link connected to the reservoir body, according to an embodiment of the disclosure.

FIG. **7** illustrates a sectional view of the reservoir body and the drive link along line A-A of the FIG. **6**, according to an embodiment of the disclosure;

FIG. **8** illustrates a rear view of the brake master cylinder assembly, according to an embodiment of the disclosure;

FIG. **9** illustrates a rear isometric view of a brake assembly, according to an embodiment of the disclosure;

FIG. **10** illustrates an isometric view of the brake assembly of FIG. **9** with a bracket assembly removed and depicting a gear wheel portion of a reservoir body engaged with a worm gear mounted to a motor, according to an embodiment of the disclosure; and

FIG. **11** illustrates a front view of the brake assembly of FIG. **9** with a portion of a base bracket of the bracket assembly removed and depicting the gear wheel portion arranged inside a curved recess of the base bracket and the motor with the worm gear arranged inside a mounting cavity of the base bracket and engaged with the gear wheel portion, according to an embodiment of the disclosure.

DETAILED DESCRIPTION OF EMBODIMENTS

The invention now will be described more fully hereinafter with reference to the accompanying drawings, in which embodiments of the invention are shown. This invention may however be embodied in many different forms and should not be construed as limited to the embodiments set forth herein. Rather, these embodiments are provided so that this disclosure will be thorough and complete, and will fully convey the scope of the invention to those skilled in the art.

It will be understood that when an element is referred to as being "on" another element, it can be directly on the other element or intervening elements may be present therebetween. As used herein, the term "and/or" includes any and all combinations of one or more of the associated listed items.

It will be understood that, although the terms first, second, third etc. may be used herein to describe various elements, components, regions, layers, and/or sections, these elements, components, regions, layers, and/or sections should not be limited by these terms. These terms are only used to distinguish one element, component, region, layer, and/or section from another element, component, region, layer, and/or section.

It will be understood that the elements, components, regions, layers and sections depicted in the figures are not necessarily drawn to scale.

The terminology used herein is for the purpose of describing particular embodiments only, and is not intended to be limiting of the invention. As used herein, the singular forms "a," "an," and "the" are intended to include the plural forms as well, unless the context clearly indicates otherwise. It will be further understood that the terms "comprises" and/or "comprising," or "includes" and/or "including" when used in this specification, specify the presence of stated features, regions, integers, steps, operations, elements, and/or components, but do not preclude the presence or addition of one or more other features, regions, integers, steps, operations, elements, components, and/or groups thereof.

Furthermore, relative terms, such as "lower" or "bottom," "upper" or "top," "left" or "right," "above" or "below," "front" or "rear," may be used herein to describe one element's relationship to another element as illustrated in the Figures. It will be understood that relative terms are intended to encompass different orientations of the device in addition to the orientation depicted in the FIGS.

Unless otherwise defined, all terms used herein have the same meaning as commonly understood by one of ordinary skill in the art to which this invention belongs. It will be further understood that terms, such as those defined in commonly used dictionaries, should be interpreted as having a meaning that is consistent with their meaning in the context of the relevant art and the present disclosure, and will not be interpreted in an idealized or overly formal sense unless expressly so defined herein.

Exemplary embodiments of the present invention are described herein with reference to idealized embodiments of the present invention. As such, variations from the shapes of the illustrations as a result, for example, of manufacturing techniques and/or tolerances, are to be expected. The numbers, ratios, percentages, and other values may include those that are ±5%, ±10%, ±25%, ±50%, ±75%, ±100%, ±200%, ±500%, or other ranges that do not detract from the spirit of the invention. The terms about, approximately, or substantially may include values known to those having ordinary skill in the art. If not known in the art, these terms may be considered to be in the range of up to ±5%, ±10%, or other value higher than these ranges commonly accepted by those having ordinary skill in the art for the variable disclosed. Thus, embodiments of the present invention should not be construed as limited to the particular shapes of regions illustrated herein but are to include deviations in shapes that result, for example, from manufacturing. The invention illustratively disclosed herein suitably may be practiced in the absence of any elements that are not specifically disclosed herein. All patents, patent applications and non-patent literature cited through this application are hereby incorporated by reference in their entireties.

Referring to FIGS. **1** and **8**, a brake assembly **100** adapted to be mounted to a handlebar of a two wheeled vehicle, for example, a saddle riding vehicle is shown. The brake assembly **100** includes a handle **102** adapted to be operated/pressed by a rider of the vehicle to apply brakes, a reservoir body **104** for holding a brake fluid that flows to the brake of the vehicle to facilitate a braking of the vehicle upon pressing of the handle **102**, a piston **106** arranged inside the reservoir body **104** and adapted to reciprocate inside the reservoir body **104** to enable a flow of fluid from the reservoir body **104** to the brake, a bracket assembly **108** configured to mount the brake assembly **100** to the handlebar, and a drive link **110** pivotally attached/coupled to the reservoir body **104** and arranged in contact with the piston **106** to push the piston **106** inside the reservoir body **104** in response to the pressing of the handle **102**.

As shown, the handle **102** includes a first end **112** pivotally engaged to the bracket assembly **108** and adapted to pivot about a first axis **114**. To pivotally attach the handle **102** and the bracket assembly **108**, a yoke portion **116** of the handle **102** at the first end **112** defines a hole **120** and the bracket assembly **108** includes a pair of forks **124** having aligned openings **126**. In the assembly of the handle **102** with the bracket assembly **108**, the yoke portion **116** is arranged inside a space between the forks **124** such that the hole **120** aligns with the aligned openings **126**, and a shoulder screw **128** extends through the openings **126** and the hole **120**. In this manner, the handle **102** is arranged to pivot about the first axis **114** that aligns with a central axis of the shoulder screw **128**. The shoulder screw **128** is secured with the forks **124** and the yoke portion **116** via a locking nut **129**.

As shown, the bracket assembly **108** includes a base bracket **130** and a cover bracket **132** removably engaged to the base bracket **130** to enable the mounting of the bracket assembly **108** to the handlebar. The base bracket **130** includes a body **134** having a first surface **136** defining a first C shaped groove **138**, and the cover bracket **132** defines a second C shaped groove **140** that faces the first C shaped groove **138** when assembled with the base bracket **130** to

define a handlebar slot **142** through which the handlebar extends. The base bracket **130** and the cover bracket **132** may be coupled to each other via a pair of fasteners, for example, cover bracket machine screws **144**.

Further, the base bracket **130** includes the pair of forks **124** extending outwardly from a second surface **146** disposed opposite to the first surface **136**. As shown, the pair of forks **124** extends rearwardly and obliquely to the second surface **146**, and the ends of the forks **124** are arranged outwardly and at a distance from a first lateral end **150** of the body **134**. Further the forks **124** are arranged such that central axes of the openings **126** extends substantially perpendicularly to the central axis of the first groove **138** of the bracket assembly **108**. Further, the base bracket **130** includes an arm **152** extending outwardly from the first lateral end **150** in a direction substantially parallel to the central axis of the slot **142**. The arm **152** defines a through hole **156** having a central axis **160** that is substantially perpendicular to the central axis of the openings **126** and the central axis of the slot **142**. The through hole **156** facilitates a rotational/pivotal coupling of the base bracket **130** with the reservoir body **104**, and the base bracket **130** along with the handle **102** is adapted to rotate/pivot axis about the central axis **160** relative to the reservoir body **104**. Accordingly, the handle **102** may set at a plurality of angular positions relative to the reservoir body **104** by rotating/pivoting the base bracket **130** about the axis **160**.

To enable the rotational/pivotable coupling of the base bracket **130** with the reservoir body **104**, the reservoir body **104** includes an extension arm **162** extending outwardly of a first lateral end **164** of a wall **166** of the reservoir body **104**. The extension arm **162** defines a groove **170** that aligns with the through hole **156** of the arm **152** of the base bracket **130**. The arm **152** and the extension arm **162** are rotatably/pivotably coupled via a screw **172**. Further, the reservoir body **104** defines a chamber **174** (i.e., hydraulic brake fluid reservoir **174**) for storing the brake fluid and a cylindrical bore **176** arranged proximate to a bottom end **178** of the reservoir body **104** and extending from the first lateral end **164** towards a second lateral end **180** of the reservoir body **104**. It may be appreciated that an end of the piston **106** is arranged inside the cylindrical bore **176**, while a second end of the piston **106** is arranged outside the reservoir body **104** and is disposed in contact the drive link **110**. Further, the first end of the piston **106** is configured to move towards the second lateral end **180** of the reservoir body **104** in response to the pressing/actuation of the handle **102**.

The piston **106** moves towards the first lateral end **164** due to a biasing force applied by a biasing member, for example, a compression spring **182**, on the piston **106** upon removal of the force on the handle **102**. The piston **106** is held in position inside the cylindrical bore **176** and with the reservoir body **104** by a retaining ring **184**. Further, a seal **186** is arranged inside the cylindrical bore **176** and proximate to the first lateral end **164** of the reservoir body **104** to prevent debris from entering inside the cylindrical bore during the linear movement of the piston **106**. Additionally, two compression gaskets **188** are mounted on the piston **106**. One of the compression gaskets **188** is arranged proximate to the first end of the piston **106**, and other of the compression gaskets is arranged proximate to the second end of the piston **106**. To assembly the piston **106** with the reservoir body, the compression gaskets **188** and the spring **182** are fitted to the piston **106**, and then assembly is arranged inside the cylindrical bore **176**. The piston is held in place inside the bore **176** by the retaining ring **184**.

Additionally, the reservoir body **104** defines a forward hydraulic fluid Orifice **190** and an aft hydraulic fluid orifice **192** that fluidly connects the chamber **174** and cylinder bore **176**, and facilitates the flow of the fluid between the chamber **174** and the cylindrical bore **176**. The fluid orifices **190**, **192** open and close during the reciprocating movement of the piston **106** inside the bore **176**. Further, it may be appreciated that the fluid moves out of the bore **176** through a hydraulic line connection **196** in response to the movement of the piston **106** towards the second lateral end **180**. Further, as shown, an axis of the movement of the piston **106** is arranged substantially horizontally.

Moreover, to cover the chamber **174**, the brake assembly **100** includes a diaphragm **200**, a diaphragm support **202**, a cover plate **204** arranged covering the chamber **174** from top. The diaphragm is arranged between the diaphragm support and the wall of the reservoir body **104**, and while the diaphragm support **202** is arranged between cover plate and the diaphragm **200**. The diaphragm, the diaphragm support **202**, and the cover plate **204** are secured to each other and the reservoir body **104** via the cover plate machine screw **206**. Also, the reservoir body **104** includes a viewing window **210** to enable a user to view a level of the brake fluid inside the chamber **174**.

Referring to FIGS. **1** and **5**, the reservoir body **104** includes a pair of brackets **212** extending outwardly and away from the first lateral end **164** of the reservoir body **104**, and are connected to the wall **166** of the reservoir body **104**. A direction of extension of the brackets **212** is similar to the extension arm **162** of the reservoir body **104**, and may be arranged downwardly of the extension arm **16**. The pair of brackets **212** enables a pivotal connection of the drive link **110** with the reservoir body **104**. A pivot axis **214** of the drive link **110** extends substantially perpendicularly to the direction of reciprocation of piston **106**.

The drive link **110** includes a vertically extending body portion **220** having a first longitudinal end **224** (i.e., bottom end **224**) and a second longitudinal end **226** (i.e., upper end **226**), and an arm portion **228** arranged proximate to the upped end **226** and extending in a lateral direction from the body portion **220**. As shown, in an assembly of the drive link **110** with the brackets **212**, the arm portion **228** extends in a direction away from the reservoir body **104** (i.e., the first lateral end **164**). To enable a smooth engagement of the handle **102** with the arm portion **228** throughout the rotational/angular positions of the handle **102** relative to the reservoir body **104**, the drive link **110** defines a round surface **230** extending from a free end **232** of the arm portion **228** towards the bottom end **224** of the body portion **220**. Similarly, the body portion **220** includes a convex surface **234** arranged opposite to the arm portion **228** and having an apex arranged proximate to the upper end **226** relative to the bottom end **224** to ensure a contact of the drive link **110** with the piston **106** at all angular positions of the handle **102** relative to the reservoir body **104**. Moreover, the drive link **110** is pivotally connected to the pair of brackets **212** at a location proximate to the bottom end **224** via a clevis pin **240** which is retained in position and with the drive link **110** by a clevis pin C clip **242**. Accordingly, the handle **102** contacts the drive link **110** at all of the angular position of the handle **102**, and thereby facilitates the advancement of the piston **106** inside the cylindrical bore **176** when the handle **102** is pressed by a user.

To facilitate the rotation/pivoting of the handle **102** (i.e., base bracket **130**) relative to reservoir body **104**, and to secure the handle **102** relative to the reservoir body **104** at any of the angular positions, the base bracket **130** defines an

arcuate slot **250** extending in a longitudinal direction and arranged proximate to the second lateral end **180** of the reservoir body **104**. The arcuate slot **250** enables the securing of the base bracket **130** (i.e., the handle **102**) at various angular position relative to the reservoir body **104**. Further, to secure the base bracket **130** with the reservoir body **104** at the selected angular position, the reservoir body **104** includes a mating groove **252**, and a screw **254** extends through the arcuate slot **250** and inside the mating groove **252**.

To set the base bracket **130** and hence the handle **102** at a different angular position relative to the reservoir body **104**, the cover bracket **132** is removed from the base bracket **130**, the screw **254** and the screw **172** is loosened, and the base bracket **130** along with the handle **102** is rotated/pivoted about the axis **160** relative to the reservoir body **104**, and is accordingly positioned at the desired angular orientation relative to the handlebar. Thereafter, the screw **254** is tightened to secure/set the base bracket **130**, and hence the handle **102** at the desired angular position relative to the reservoir body **104**. Subsequently, the cover bracket **132** is mounted to the base bracket **130** with the handlebar extending through the handlebar slot **142**.

In this manner, only the handle **102** and the bracket assembly **108** rotates with respect to the handlebar without changing the position of the reservoir body **104**, keeping the reservoir body vertically oriented such that the brake fluid inside the reservoir body **104** remains level with the ground when the vehicle is in an upright position.

Referring to FIGS. **9** to **11**, a brake assembly **900** according to an alternative embodiment is shown. The brake assembly **900** is similar to the brake assembly **100** except that a bracket assembly **908** and a reservoir body **904** of the brake assembly **900** is different from the bracket assembly **108** and the reservoir body **104** of the brake assembly. The reservoir body **904** is different from the reservoir body **904** in the aspect that the reservoir body includes a gear wheel portion **952** extending in a longitudinal direction and having gear teeth **954**. Further, the bracket assembly **908** is different from the bracket assembly **108** in the aspect the arcuate slot **250** is omitted from a base bracket **930** of the bracket assembly **908**.

Further, the brake assembly **900** includes an actuator **960** having a motor **962** and a worm gear **964** attached to a shaft of the motor **964** and arranged in engagement with the gear wheel portion **952**. As shown, the actuator **960** is mounted to the base bracket **930** and to facilitate the mounting of the actuator **960** with the base bracket **930**, the base bracket defines a mounting cavity **966**. Further, to enable the engagement of the worm gear **964** with the gear teeth **954** of the gear wheel portion **952**, the base bracket defines a curved recess **968**. In the assembly of the base bracket **930** with the reservoir body **904**, the gear wheel portion **952** extends inside the curved recess **968** and engages with worm gear **964**. Although the gear wheel portion **952** and the actuator **960** are shown and contemplated to be mounted to the reservoir body **904** and the base bracket **930**, respectively, it may be envisioned that the gear wheel portion **952** may be mounted to the reservoir body **904** and the actuator **960** may be mounted to the base bracket **930**.

To rotate the handle **102** and hence the base bracket **930** about the axis **160**, a user may first remove the cover bracket **132** from the base bracket **930**, and then loosen the screw **172**. Thereafter, the user may hold the reservoir body **904** to keep the orientation of the reservoir body **904** fixed relative to the handlebar, and actuates the actuator **960**. In response to the rotation of the motor **962** and hence the worm gear **964**, the base bracket **930** rotates/pivots about the axis **160** relative to the reservoir body **904**, causing a change in angular position of the handle **102** relative to the handlebar. After orienting the handle **102** at the desired orientation relative to the handlebar, the user fixes the cover bracket **132** with the base bracket **930**, thereby fixing the position of the handle **102** relative to the handlebar.

In an embodiment, to actuate the actuator **960**, the brake assembly **100** may include a switch **970**. In an embodiment, the motor **962** is a bidirectional motor and is configured to rotate in a first direction and a second direction opposite to the first direction to enable a rotation of the worm gear **964** in a first direction and a second direction, respectively.

To enable the rotation of the motor **962** in the first direction or the second direction, the switch **970** may be a **3**-position toggle switch. The motor **962** remains switched off when the switch **970** is arranged at a first position (i.e., center position), while in motor **962** rotates in the first direction when the switch **970** is moved to a second position. The motor **962** rotates in the second direction in response to the movement of the switch **970** to a third position. In an embodiment, the brake assembly **100** also includes a controller **972** arranged in communication with the motor **962** and the switch **970**, and controls the rotation of the motor **962** based on the position of the switch **970**. Further, to power the motor **962** and the controller **972**, the brake assembly **100** may include a battery **976**.

The embodiments provide for several advantages over the prior art. For example, the brake assembly **100**, **900** allows for changing the angular positions of the handle **102** without changing the vertical orientation of the reservoir body **104**, **904** relative to a ground. Accordingly, by allowing to adjust the relative angular position of the base bracket **130**, **930** and the reservoir body **104**, **904**, the reservoir body **104**, **904** can be mounted to the handlebar of the vehicle such that the reservoir body **104**, **904** extends vertically from the ground so that the brake fluid is level with the ground when the motorcycle is in the upright position. Accordingly, brake assembly **100**, **900** prevents the air from entering the cylindrical bore **176** due to the change in angular positioning of the handle **102** or the handlebar.

While the invention has been described in terms of exemplary embodiments, it is to be understood that the words that have been used are words of description and not of limitation. As is understood by persons of ordinary skill in the art, a variety of modifications can be made without departing from the scope of the invention defined by the following claims, which should be given their fullest, fair scope.

What is claimed is:

1. A brake assembly adapted to be mounted to a handlebar of a vehicle, the brake assembly comprising:

a reservoir body adapted to store a brake fluid and defines a cylindrical bore;

a piston adapted to reciprocate inside the cylindrical bore;

a base bracket pivotably coupled to the reservoir body and adapted to be mounted to the handlebar;

a handle pivotally coupled to the base bracket and adapted to pivot relative to the base bracket; and

a drive link pivotably coupled to the reservoir body and configured to pivot relative to the reservoir body to advance the piston inside the cylindrical bore in response to the pressing of the handle,

wherein the handle is configured to be set at a plurality of angular positions with respect to the reservoir body by pivoting the base bracket relative to the reservoir body; and

wherein the base bracket includes an arcuate slot to facilitate the setting of the handle at the plurality of angular positions.

2. The brake assembly of claim **1**, wherein the reservoir body defines a mating groove and the brake assembly includes a screw extending inside the mating groove through the arcuate slot to set the handle at one of the plurality of angular positions.

3. The brake assembly of claim **1**, wherein

the reservoir body includes a gear wheel portion having a plurality of teeth; and,

the brake assembly includes an actuator mounted to the base bracket and having a worm gear engaged with the gear wheel portion to facilitate the pivoting of the base bracket relative to the reservoir body to set the handle the plurality of angular positions.

4. The brake assembly of claim **3**, wherein the actuator includes a motor, and the worm gear is connected to the motor and rotates in response to an actuation of the motor to facilitate the setting of the handle in any of the plurality of angular positions relative to the reservoir body.

5. The brake assembly of claim **1**, wherein

the reservoir body includes an extension arm; and,

the base bracket includes an arm pivotably coupled to the extension arm.

6. The brake assembly of claim **1**, wherein the drive link includes

a convex surface adapted to contact the piston; and,

a round surface arranged opposite to the convex surface and adapted to contact the handle,

wherein the convex surface and the round surface together facilitate the advancement of the piston inside the cylindrical bore in response to the pressing of the handle at any of the plurality of angular positions of the handle relative to the reservoir body.

7. The brake assembly of claim **1**, wherein the reservoir body includes a pair of brackets extending outwardly of a first lateral end of the reservoir body, wherein the drive link is arranged between the pair of brackets and is pivotally coupled to the pair of brackets.

8. The brake assembly of claim **7**, wherein the drive link includes

a vertically extending body portion having a first longitudinal end and a second longitudinal end; and,

an arm portion extending from the body portion and arranged proximate to the second longitudinal end of the body,

wherein the handle is adapted to contact the arm and the first longitudinal end is pivotally coupled to the pair of brackets.

9. The brake assembly of claim **1**, wherein the handle is configured to advance the drive link in each of the plurality of angular positions of the handle relative to the reservoir body.

10. The brake assembly of claim **1** further including a cover bracket adapted to engage with the base bracket to facilitate the mounting of the base bracket to the handlebar.

11. The brake assembly claim **10**, wherein the base bracket and the cover bracket together define a handlebar slot, wherein the handlebar extends through the handlebar slot in the engagement of the brake assembly with the handlebar.

12. A brake assembly adapted to be mounted to a handlebar of a vehicle, the brake assembly comprising:

a reservoir body adapted to store a brake fluid and defines a cylindrical bore;

a piston adapted to reciprocate inside the cylindrical bore;

a base bracket pivotably coupled to the reservoir body and adapted to be mounted to the handlebar;

a handle pivotally coupled to the base bracket and adapted to pivot relative to the base bracket; and

a drive link pivotably coupled to the reservoir body and configured to pivot relative to the reservoir body to advance the piston inside the cylindrical bore in response to the pressing of the handle,

wherein the handle is configured to be set at a plurality of angular positions with respect to the reservoir body by pivoting the base bracket relative to the reservoir body;

wherein the reservoir body includes a gear wheel portion having a plurality of teeth; and

wherein the brake assembly includes an actuator mounted to the base bracket and having a worm gear engaged with the gear wheel portion to facilitate the pivoting of the base bracket relative to the reservoir body to set the handle the plurality of angular positions.

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